REMARKS

Favorable reconsideration and allowance of the present application are respectfully requested in view of the following remarks. Claims 1-31 remain pending. Claims 1, 5, 18, 19, and 24 are independent.

ALLOWABLE SUBJECT MATTER

Applicants appreciate that claims 26-28 are indicated to define allowable subject matter.

§ 103 REJECTION – TAKAYAMA, YAMAGAMI

Claims 1, 12-14, 18-20, 22-23, 24-25, and 30-31 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama (USPN 6,512,791) in view of Yamagami (USPN 5,384,644). Applicants respectfully traverse.

For a Section 103 rejection to be proper, a *prima facie* case of obviousness must be established. *See M.P.E.P. 2142.* Some of the requirements to establish the *prima facie* case of obviousness include:

- Prior art references, when combined, must teach or suggest all claim limitations (*see M.P.E.P. 2142; M.P.E.P. 706.02(j)*);

- Cited reference cannot teach away from the claimed invention (*See M.P.E.P. 2141.02*);
- The proposed modification may not render a cited reference unsatisfactory for its intended purpose (*see M.P.E.P. 2143.01*).

As will be demonstrated below, the purported combination of Takayama and Yamagami fails to satisfy at least the above noted requirements. Independent claim 1 recites, in part, "a fixed length coding circuit for dividing the image data into unit blocks, each comprising a predetermined number of pixels, and for coding the pixels in each unit block after obtaining an average level of the pixels in the unit block, wherein a length of the code output from the fixed length coding circuit is fixed."

In the Final Office Action, it is admitted that Takayama fails to teach or suggest a coding circuit for outputting a fixed length code. *See Final Office Action, page 3, lines 7-8.* However, it is asserted that Takayama's device may be modified as disclosed in Yamagami to cure this defect of Takayama. Applicants respectfully disagree.

Applicants note that Yamagami is directed toward controlling memory capacity of an image processing apparatus. *See Yamagami, column 2, lines 34-36.* The primary motivation in Yamaguchi is so that a predictable number of images may be recorded in the memory of the image processing apparatus,

such as a camera. For example, the device in Yamagami may compress and store 10 images in 1 Mbyte of memory, or an average of 100 Kbytes per image. *See Yamagami, column 9, lines 1-15.*

Yamagami discloses two general methods to achieve the above-noted objective. In the first method, the image data is encoded and processed such that the amount of data for each frame is fixed, for example at 100 Kbytes. *See Yamagami, descriptions of first and second embodiments for example.* In this manner, a predetermined number of images may be recorded on a recording medium. *See Yamagami, column 4, lines 15-17.*

In the second method, the amount of data for each frame is not equally allocated. However, the compressing/encoding of the image frames are manipulated such that predetermined number of frames are recorded in memory without overflowing the amount of storage available. *See Yamagami, description of the third embodiment for example.*

The second method will be discussed at this juncture. Clearly, if the amount of data for each frame not equally allocated, then the any embodiments of Yamagami utilizing the second method cannot meet the limitation of outputting a fixed length code. Thus to the extent that combining embodiments of Yamagami utilizing this second method and Takayama is

contemplated, such combination **cannot teach or suggest all claimed limitations**.

Regarding the first method – i.e. to fix the amount of data for each frame to a particular limit – Yamaguchi discloses first subjecting the image data through a variable length coding ("VLC") process and then subjecting the output of the VLC process to a fixed length coding ("FLC") process. *See Yamagami, Figure 1; column 6, lines 32-58.* Both the FLC and VLC processes may include discrete cosine transformation, Huffman coding, and the like. *See Yamaguchi, Figure 4; column 4, line 62 – column 5, line 4.* As described in Yamagami, an optical image is picked up by the image pickup device 2, converted to digital image data signal by the A/D converter 3, the digital image data is stored in the image memory 4, encoded by the encode device 5, and stored in the record device 6, all under the control of the control unit 7. *See Yamagami, Figure 2; column 4, lines 18-59.*

Yamagami discloses that the after the FLC process, the amount of image data for the frame is fixed. The method to achieve fixed code amount as disclosed in Yamagami may be summarized as follows. Yamagami recognizes that a relationship exists between a quantization parameter F used to compress the image data and the resulting amount of data after compression. *See Figures 3A and 3B; column 1, lines 42-57.* The compression ratio is always

a monotone decreasing function. Thus, by controlling the quantization parameter F, a desired compression ratio may be achieved.

However, it is important to note that the amount of encoded data for each image frame is different. Clearly, a more complex image requires more data for encoding than a relatively simple image even if the number of pixels of the two images is the same. Thus, to fix the amount of compressed data to a predetermined value, for example 100 Kbytes, the more complex image requires a high compression ratio (large value for the quantization parameter F). On the other hand, the relatively simple image requires a lower compression ratio (smaller value for the quantization parameter F) to fix the amount of compressed data to the same predetermined value after compression.

This is exactly the mechanism used in Yamagami. First, an image data from image memory 4 is subjected to an encoding process through the encode device 5. This is the VLC process. *See Figure 4.* In this VLC process, a predetermined quantization parameter F is used to first compress the image data and the resulting amount of compressed data for the image frame is counted. *See Yamagami, column 5, line 38-43.*

As noted above, the resulting amount of compressed data varies depending on the complexity of the image frame. At this point, the image data is encoded multiple times (trial-and-error) while adjusting the quantization

parameter F until the desired amount of encoded data is counted. *See Yamagami, column 5, lines 44-47.* When the desired value of the quantization parameter F is determined, the image data is again encoded and the resulting compressed data is stored in the record device 6. *See Yamagami, column 5, lines 48-54.* This is the FLC process.

There are at least two important points to note. First, both the VLC processing and the FLC processing is performed on an image frame by image frame basis. This is logical since both are essentially the same process but with different quantization parameter F values. Yamagami does not disclose or suggest "dividing the image data into unit blocks" at all. Indeed, the suggestion is quite the opposite.

Yamagami clearly states that the encode device 5 "counts the amount of encoded data for one frame." *Emphasis added, column 5, lines 42-43.* Thus, to the extent that Yamagami teaches processing image data on a frame-by-frame basis, Yamagami **teaches away** from the claimed invention.

In addition, Yamagami clearly indicates that the amount of data is fixed for the frame. There is no disclosure that the length of data is fixed on a block-by-block basis. Indeed, to the extent that coding is performed utilizing compression methods such as DCT which inherently output variable length codes, the suggestion is quite the opposite. Therefore, even the combination of

embodiments of Yamagami utilizing the first method and Takayama **cannot teach or suggest all claimed limitations**.

Second, as noted above, the desired amount of compressed data is achieved by adjusting the quantization parameter F for individual image frames. This necessitates that the quality of the image must be of secondary concern, especially for complex images. In other words, the quality of the image frames after compression cannot be considered.

This is in complete contrast to the stated objective of Takayama. More specifically, Takayama clearly states that one of the objectives is to "improve the quality of the inputted image." *See Takayama, column 3, lines 26-30.* Clearly, Yamagami **renders Takayama unsatisfactory for its intended purpose**.

Applicants do recognize that Yamagami discloses specifying the quantization parameter F to be sufficiently small to "prevent the image quality deterioration." *See Yamagami, column 7, line60-63.* However, this teaching is in the context of describing the third embodiment of Yamagami, which utilizes the second method mentioned above. As clearly shown above, combining the teachings of the second embodiment of Yamagami and Takayama **fails to teach or suggest all claimed limitations**.

Therefore, independent claim 1 is not rendered obvious by the combination of Takayama and Yamagami. Independent claims 18, 19, and 24 recite a similar feature as claim 1. Therefore, for similar reasons, claims 18, 19, and 24 are also not rendered obvious by the combination of Takayama and Yamagami.

Claims 12-14, 20, 22-23, 25, and 30-31 depend from independent claims 1, 19, or 24, directly or indirectly. Therefore, for the reasons stated with respect to claims 1, 19, or 24 as well as on their own merit, these dependent claims are also not rendered obvious by the combination of Takayama and Yamagami.

Applicants respectfully request that the Section 103 rejection of claims 1, 12-14, 18-20, 22-23, 24-25, and 30-31 based on a combination of Takayama and Yamagami be withdrawn.

§ 103 REJECTION – TAKAYAMA, YAMAGAMI, IWASAKI

Claims 5-7, 15-17, 21, 25, and 29 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of Yamagami and in further view of Iwasaki et al (USPN 5,414,487, hereinafter "Iwasaki"). Applicants respectfully traverse.

Independent claim 5 recites a similar limitation to independent claims 1, 18, 19, and 24. It is also noted that claims 6-7, 15-17, 21, 25, and 29 depend from independent claims 5, 19, and 24. It has also been shown that the combination of Takayama and Yamagami may not be relied upon to render obvious the independent claims. Iwasaki has not been, and indeed cannot be, relied upon to cure at least the above-stated deficiencies of Takayama and Yamagami.

Therefore, independent claims 5, 19, and 24 are not rendered obvious by the combination of Takayama, Yamagami, and Iwasaki. For the reasons stated with respect to the independent claims 5, 19, and 24 as well as on their own merit, dependent claims 6-7, 15-17, 21, 25, and 29 are also not rendered obvious by the combination of Takayama, Yamagami, and Iwasaki.

Applicants respectfully request that the Section 103 rejection of claims 5-7, 15-17, 21, 25, and 29 based on a combination of Takayama, Yamagami, and Iwasaki be withdrawn.

§ 103 REJECTION – TAKAYAMA, YAMAGAMI, WATANABE, IWASAKI

Claims 8-11 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of Yamagami, Iwasaki, and Watanabe et al. (USPN 5,032,927, hereinafter "Watanabe"). Applicants respectfully traverse.

It is noted that claims 8-11 depend from independent claim 5. It has also been shown that the combination of Takayama, Yamagami, and Iwasaki cannot be relied upon to render obvious claim 5. Watanabe has not been, and indeed cannot be, relied upon to cure at least the above-stated deficiencies of Takayama, Yamagami, and Iwasaki.

Therefore, independent claim 5 is not rendered obvious by the combination of Takayama, Yamagami, Iwasaki, and Watanabe. Thus, for the reasons stated with respect to the independent claim 5 as well as on their own merit, dependent claims 8-11 are also not rendered obvious by the combination of Takayama, Yamagami, Iwasaki, and Watanabe.

Applicants respectfully request that the Section 103 rejection of claims 8-11 based on a combination of Takayama, Yamagami, Iwasaki, and Watanabe be withdrawn.

CONCLUSION

All objections and rejections raised in the Final Office Action having been addressed, it is respectfully submitted that the present application is in condition for allowance. Should there be any outstanding matters that need to be resolved, the Examiner is respectfully requested to contact Hyung Sohn (Reg.

No. 44,346), to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1. 17; particularly, extension of time fees.

Respectfully submitted,

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